

Appl. No. 09/552,540
Amendment dated November 21, 2003
Response to Office Action of May 22, 2003

Amendments to the Specification

Please replace paragraph beginning on page 8, line 8, and ending on page 8, line 19, with the following amended paragraph:

Fig. 1 is a diagram illustrating the construction of the semiconductor-laser-excited solid-state laser apparatus in an embodiment of the present invention. The semiconductor-laser-excited solid-state laser apparatus of Fig. 1 comprises a semiconductor laser unit 11 having a resonator 51, condenser lenses 12a and 12b, a solid-state laser medium 13, a resonator mirror 14, quarter-wave plates 15 and 16, an optical wavelength conversion element 17, a polarization control element 18, a wavelength selection element 19, a beam splitter 22, an optical detector 23, and an automatic power control (APC) circuit 24.

Please replace paragraph beginning on page 11, line 25, and ending on page 12, line 14, with the following amended paragraph:

Fig. 2 shows graphs illustrating relationships between the second harmonic wave output and the output power of the semiconductor laser unit, in semiconductor-laser-excited solid-state laser apparatuses in which the resonator lengths in the semiconductor laser units are respectively 0.5 mm, 0.75 mm, 1 mm, 1.5 mm, 2 mm, and 3 mm. As illustrated by the curve b in Fig. 2, when the output power of the semiconductor laser unit is increased by 10% from 2.0 W to 2.2 W in the conventional semiconductor-laser-excited solid-state laser apparatus in which the resonator length in the semiconductor laser unit is 0.75 mm, the increase in the second harmonic wave output is only 4%. That is, the solid-

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state laser is not efficiently excited by the semiconductor laser unit having the 0.75 long resonator 51.

Please replace paragraph beginning on page 12, line 15, and ending on page 13, line 7, with the following amended paragraph:

On the other hand, the second harmonic wave output is increased by 8% with 10% increase in the output power of the semiconductor laser unit having a 1.5 mm long resonator 51, as illustrated by the curve d in Fig. 2. That is, the increase in the second harmonic wave output is doubled when the resonator length in the semiconductor laser unit is increased from 0.75 mm to 1.5 mm. When the resonator length in the semiconductor laser unit is further increased, the second harmonic wave output can be increased accordingly, as illustrated in Fig. 2. For example, in the semiconductor-laser-excited solid-state laser apparatus in which the resonator length in the semiconductor laser unit is 3.0 mm, the second harmonic wave output increases linearly with the increase in the output power of the semiconductor laser unit, as illustrated by the curve f in Fig. 2. That is, an ideal output characteristic is obtained when the semiconductor laser unit includes the 3.0 mm long resonator 51.

Please replace paragraph beginning on page 13, line 8, and ending on page 13, line 26, with the following amended paragraph:

Fig. 3 is a graph illustrating the relationship between the wavelength shift and the resonator length in the semiconductor laser unit. In Fig. 3, the blank circles indicate the

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wavelength shift values in the output of the semiconductor laser unit when the semiconductor laser unit including a 1.0 mm long resonator 51 is simply fixed to a block stem as a fixture; the blank squares indicate the wavelength shift values when the semiconductor laser unit having a 1.5 mm long resonator 51 is simply fixed to a block stem as a fixture; the filled circle indicates the wavelength shift value when the semiconductor laser unit having a 1.0 mm long resonator 51 is mounted in a laser diode (LD) package; and the filled squares indicate the wavelength shift values when the semiconductor laser unit having a 1.5 mm long resonator 51 is mounted in a laser diode (LD) package. In the laser diode (LD) package, the semiconductor laser unit is in contact with a heat sink or the like, and is provided with a cooling apparatus.